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Offenlegungsschrift

PRESTRESSED CONCRETE STRUCTURAL MEMBER WITH ONE OR SEVERAL
STRESSING MEMBERS

[Inventor's name withheld]

UNITED STATES PATENT AND TRADEMARK OFFICE
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PRESTRESSED CONCRETE STRUCTURAL MEMBER WITH ONE OR SEVERAL
STRESSING MEMBERS

[Spannbetonbauteil mit einem oder mehreren Spanngliedern]

Inventor: Name withheld by request
Applicant: Dyckerholl & Widmann AG

Request for examination according to § 44 of the Patent Law was made.

Claims

1. Prestressed concrete structural member with one or several stressing members consisting primarily of stranded wires, the stressing forces of which stressing members are transferred onto the concrete in the state of use by end anchorings, in particular wedge anchorings, and which for the rest are not adhered to the concrete, characterized in that the stressing member or stressing members are additionally anchored at at least one position in the course of their length, preferably in the area of the end anchorings, to the latter opposite the structural member.

2. The prestressed concrete structural member according to Claim 1, characterized in that the additional anchoring is achieved by producing a subsequent adhesion by injecting hardening material, e.g., cement glue, artificial resin adhesive or the like in a hollow space surrounding the stressing member or stressing members.

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* [Numbers in the margin represent pagination of the original text.]

3. The prestressed concrete structural member according to Claim 2, characterized in that the stressing member or stressing members are surrounded with jacketings for producing the subsequent adhesion to the concerned spots which jacketings form a closed hollow space around the particular stressing member and can be connected to the injecting and/or ventilating lines.

4. The prestressed concrete structural member according to Claim 3, characterized in that each jacketing consists of at least two shell-shaped parts that can be set laterally on the particular stressing member.

5. The prestressed concrete structural member according to one of Claims 1 to 4, characterized in that positively connected anchoring elements are provided for an additional anchoring to the stressing member or stressing members.

6. The prestressed concrete structural member according to one of Claims 1 to 5, characterized in that the stressing member or stressing members is/are provided with a jacketing, coating or the like outside of the anchoring positions for corrosion protection.

The invention is relative to a prestressed concrete structural member with the features of the generic part of Claim 1. /3

Prestressed concrete construction recognizes in addition to the prestressing with immediate adhesion, the so-called prestressing bed concrete, in particular the prestressing with subsequent adhesion, in which the stressing members are guided in a longitudinally movable manner in jacket tubes, stressed after the hardening of the concrete and the annular spaces remaining in the jacket tubes are subsequently injected with concrete mortar. In this manner an adhesion is produced between the particular stressing members and the concrete surrounding them over their entire length that constitutes an additional safety not only in a ruptured state but also in the event of a possible failure of an anchoring due to strong dynamic strains. /4

It is often difficult, not only in the case of very long stressing members, to press in the concrete mortar for producing the subsequent adhesion and it is not always possible to achieve, even when using the greatest care, that the stressing members are sufficiently encased by concrete mortar at all positions. Even if such defective spots could be accepted for the adhesive effect, the subsequently injected concrete mortar brings about the corrosion protection of the stressing members. This protection is adversely affected at such defective spots.

Stressing members with increased requirements for corrosion protection have recently been built in increasingly without adhesion. There is the possibility here of providing the stressing members at the factory already with an appropriate corrosion protection, e.g., with a coating of grease and a jacketing of polyethylene and avoiding in this manner the otherwise customary casing of the stressing members at the construction site, where the work cannot be performed so exactly by nature as in the factory. However, this has the disadvantage of the

lacking system reserve in the anchoring area and at damaged spots in the free length as a consequence of a complete lack of an adhesion. In the case of very high dynamic strains the oscillation resistance in the anchoring area is not always sufficient.

The invention has the basic problem of creating a possibility of regaining the system reserve lost as a consequence of the lacking adhesion in the case of stressing members built in without adhesion.

The invention solves this problem with the features of the characterizing part of Claim 1.

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Advantageous further developments of the invention result from the subclaims.

The basic concept of the invention is to provide, in addition to the end anchorings of the stressing members, other anchoring positions that can preferably be located in the area of the end anchorings, but can also be located in the inner area of the stressing members, in particular in the case of long stressing members running over several fields, and to design these additional anchoring positions in such a manner that the stressing members are adhered to the concrete surrounding them at these positions after the stressing to an appropriate length. This adhesion can take place, as is customary, by injecting concrete glue or artificial resin adhesive, which can be reliably brought about and also monitored without difficulties over a limited stretch; it can be supported or supplemented by anchoring elements to be connected positively to the particular stressing member.

The invention will be explained in detail in the following with reference made to an exemplary embodiment shown in the drawings.

Figure 1 shows an additional anchoring in accordance with the invention in the anchoring area and

Figure 2 shows an intermediate anchoring in the area of the free length of a stressing member.

Figure 1 shows the anchoring of stranded wire 1 in longitudinal section which is run through a central bore in anchoring body 2 and is fixed opposite the latter by multipartite ring wedge 3. Anchoring body 2 is embedded in concrete structural member 4 and stranded wire 1 is accessible in the area of recess 5 for stressing.

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Stranded wire 1 is provided over the greatest part of its length with jacketing 6 for corrosion protection, e.g., with a grease coating applied in the production factory already that is protected by a polyethylene hose from mechanical damage. Jacketing 6, that must be removed in any case in the area of the anchoring, is removed in the example of figure 1 following the anchoring to a further section of the length of stranded wire 1 and replaced by jacket tube 7 connected on the one hand by transitional piece 8 to anchoring body 2 and on the other hand by transitional piece 9 to jacketing 6. Connecting pieces 10 are provided on each one of transitional pieces 8, 9 on which connecting pieces small injecting and/or ventilating tubes 11 can be

connected. The hollow space remaining inside jacket tube 7 and transitional pieces 8, 9 is pressed out after the stressing of stranded wire 1 with hardening material 12, preferably cement mortar.

It is also possible when using specially designed wedges 3 to eliminate injection line 11 adjacent to anchoring body 2 and to carry out the injection from recess 5 through anchoring body 2.

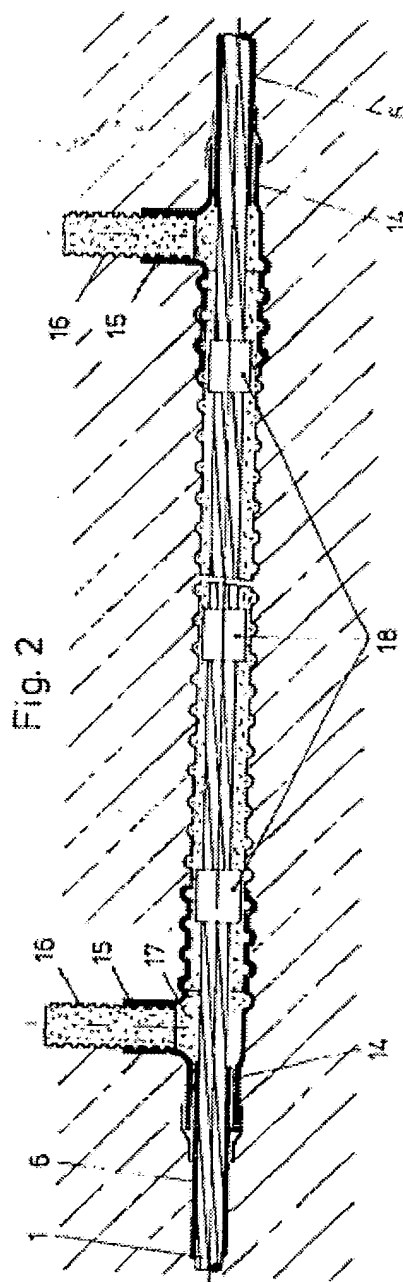
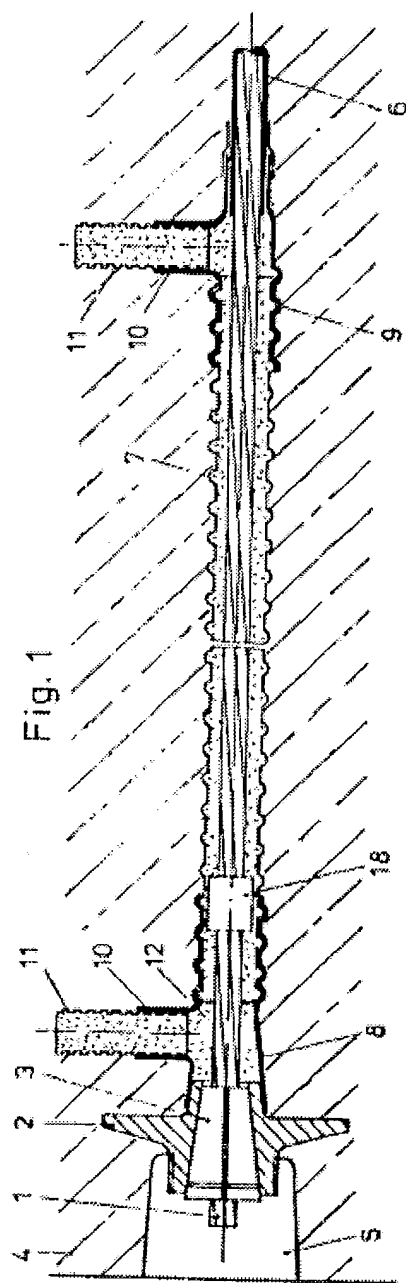
A correspondingly designed intermediate anchoring can be provided in accordance with figure 2 at any desired position of the stressing member. In this instance too coating 6 is removed over a certain length of stranded wire 1 and replaced with jacket tube 13 with transitional pieces 14 that are connected tightly to jacket tube 13 and to coating 6. In this instance also injection and/or ventilation lines 16 can be connected to connecting tube pieces 15 by means of which the remaining hollow space is pressed out with cement mortar 17. /7

The adhesion lengths can be shortened by interposed anchoring elements 18 positively connected to stranded wire 1. These anchoring elements 18 can be designed like pressed sleeves that are pressed onto stranded wire 1.

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